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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/558,645	04/26/2000	Alexander Kaplan	08935-170001/M-4860	9640
26161	7590	02/21/2006	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EDMONDSON, LYNNE RENEE	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/558,645

Applicant(s)

KAPLAN ET AL

Examiner

Lynne Edmondson

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 October 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39-43 is/are allowed.
- 6) ☒ Claim(s) 15-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

Art Unit: 1725

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 15-19, 26, 27, 29, 32 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Urry (USPN 6383674 B1).

Urry teaches an air battery comprising a container (20) having an air access port (opening, 26), (col 3 lines 26-48), a seal (32), a cathode (60) coated on a collector (foil), the coating may comprise 100% MnO<sub>2</sub>(col 6 lines 34-45) or may comprise a hydrophobic binder (PTFE) mixed with graphite and MnO<sub>2</sub> (col 4 lines 36-67), a zinc anode (70) and separators (75) (col 6 lines 3-33). The battery may be wound into a cylindrical shape (figure 1 and col 5 lines 12-48) or prismatic shape (col 3 lines 25-33). A flat rolled battery would be racetrack (oval) shaped. Any size battery can be formed including but not limited to AA (col 6 lines 45-53) size cells. See also Urry claims 1-3, 11 and 21.

2. Claims 15-29 and 33-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaplan et al. (USPN 6399243 B1).

Art Unit: 1725

Kaplan teaches an air recovery battery with a racetrack configuration (col 3 lines 1-27) comprising a container (20) having an air access ports (openings, col 4 lines 45-48), a seal assembly (141), a cathode (50) coated on a collector (col 3 lines 44-57), the coating comprises 60-93% MnO<sub>2</sub>, carbon and 2-25% of a hydrophobic binder (PTFE) (col 3 lines 44-63), preferably 2-7% binder (col 4 lines 8-19), a zinc anode (80) and separators (40) (col 3 lines 6-15 and col 4 lines 45-67). The battery may be wound into a cylindrical shape. Any size battery can be formed including but not limited to AA and AAA (col 3 lines 27-34) size cells. See also Kaplan claims 1-8, 14-20 and 24-26.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 20-25 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urry (USPN 6383674 B1) in view of Passaniti et al. (USPN 6261709 B1).

Urry teaches an air battery comprising a container (20) having an air access port (opening, 26), (col 3 lines 26-48), a cathode (60) coated on a collector (foil), the coating may comprise 100% MnO<sub>2</sub> (col 6 lines 34-45) or may comprise a hydrophobic binder (PTFE) mixed with graphite and MnO<sub>2</sub> (col 4 lines 36-67), a zinc anode (70) and

Art Unit: 1725

separators (75) (col 6 lines 3-33). The battery may be wound into a cylindrical shape (figure 1 and col 5 lines 12-48) or prismatic shape (col 3 lines 25-33). A flat rolled battery would be racetrack (oval) shaped. Any size battery can be formed including but not limited to AA (col 6 lines 45-53) size cells. However, there is no disclosure of MnO<sub>2</sub> amounts disclosed in compositions containing binders. Neither are binder amounts disclosed.

Passanati teaches an air battery comprising a cathode coated on a collector (col 8 lines 8-47 and col 12 lines 1-11) wherein the cathode comprises 3-10% PTFE (col 14 line 46 – col 15 line 4) and MnO<sub>2</sub> with a zinc anode (col 6 lines 40-67). The components are cylindrically wound to form a AA size cell (figure 4 and col 8 lines 32-36).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a relatively low binder content (10% or less) to provide stability and minimize passage of air into the anode thereby maximizing performance (Urry, col 2 lines 25-40). Too much binder decreases strength while too little prevents good adhesion of the cathode material.

4. Claims 20-23, 27, 28, 30, 31 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urry (USPN 6383674 B1) in view of Kordes et al. (USPN 3945874).

Urry teaches an air battery comprising a container (20) having an air access port (opening, 26), (col 3 lines 26-48), a cathode (60) coated on a collector (foil), the coating

Art Unit: 1725

may comprise 100% MnO<sub>2</sub>(col 6 lines 34-45) or may comprise a hydrophobic binder (PTFE) mixed with graphite and MnO<sub>2</sub> (col 4 lines 36-67), a zinc anode (70) and separators (75) (col 6 lines 3-33). The battery may be wound into a cylindrical shape (figure 1 and col 5 lines 12-48) or prismatic shape (col 3 lines 25-33). A flat rolled battery would be racetrack (oval) shaped. Any size battery can be formed including but not limited to AA (col 6 lines 45-53) size cells. However, no other cylindrical battery sizes are taught. Neither are MnO<sub>2</sub> amounts disclosed in compositions containing binders.

Kordesch teaches a battery (col 1 lines 11-22) comprising a container (34) having a port (38), a cathode (28) coated on a collector (36), a zinc anode (31) and separators (32,33) (figure 4, col 4 lines 25-49, col 5 lines 1-42 and col 9 lines 1-22). The battery may be any shape including but not limited to prismatic (flat) (col 1 lines 22-26), rectangular (col 4 lines 1-24) or cylindrical (col 9 lines 39-45). The cathode comprises up to 90% MnO<sub>2</sub> and 8% carbon with a binder material (col 5 lines 25-40) comprising 2.5-3.0 % of a hydrophobic polymer binder (col 11 lines 50-60) or up to 5% (col 18 lines 40-41). The composition may contain 70-80, 80 or 85% MnO<sub>2</sub> (col 8 lines 32-49). Any size battery can be formed including but not limited to AA (col 13 line 65), C and D (col 15 lines 30-51) size cells. AAA batteries would be formed the same way. The battery may also be rectangular with parallel elements forming a racetrack battery (figures 15 and 16).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a relatively low binder content (10% or less) to provide stability and

Art Unit: 1725

minimize passage of air into the anode thereby maximizing performance (Urry, col 2 lines 25-40). Too much binder decreases strength while too little prevents good adhesion of the cathode material. It is presumed that all cylindrical batteries would be made the same way regardless of size.

5. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaplan et al. (USPN 6399243 B1).

Kaplan teaches an air recovery battery with a racetrack configuration (col 3 lines 1-27) comprising a container (20) having an air access ports (openings, col 4 lines 45-48), a seal assembly (141), a cathode (50) coated on a collector (col 3 lines 44-57), the coating comprises 60-93% MnO<sub>2</sub>, carbon and 2-25% of a hydrophobic binder (PTFE) (col 3 lines 44-63), preferably 2-7% binder (col 4 lines 8-19), a zinc anode (80) and separators (40) (col 3 lines 6-15 and col 4 lines 45-67). The battery may be wound into a cylindrical shape. Any size battery can be formed including but not limited to AA and AAA (col 3 lines 27-34) size cells. However, there is no disclosure of C or D batteries.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the same process would be used to make cylindrical air batteries of a variety of sizes including C and D size cells depending on the application or use of the cell (Kaplan, col 3 lines 28-34). Although more material would be used for larger batteries, the process is essentially the same.

Art Unit: 1725

***Response to Arguments***

6. Applicant's arguments with respect to claims 1-42 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

7. Claims 39-43 are allowed.

8. The following is an examiner's statement of reasons for allowance: The closest prior art teaches a method of making a backing layer with no catalyst using the instant method. A separate catalyst layer may be subsequently attached but is not a component of the initial mixture or paste. See Debe et al. (USPN 6183668).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chandramouli et al. (USPN 4775455, catalyst, carbon, stirring at room T), Shun et al. (USPN 6127061, >60%MnO<sub>2</sub>, 1-30% binder, Zn anode, ports), Getz et al. (USPN 5464709, hydrophobic binder, >60% MnO<sub>2</sub>), Thiebolt, II et al. (USPN



Art Unit: 1725

6174622 B1, PTFE, >60% MnO<sub>2</sub>), Hull et al. (USPN 6265104 B1, all sizes made by same process), Oh et al. (USPN 6187475 B1, MnO<sub>2</sub>, graphite, binder, amounts), Tomiyama (USPN 5677083, MnO<sub>2</sub>, graphite, binder, amounts) and Buchta (USPN 4582553, vacuum mixing).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (703) 306-5699. The examiner can normally be reached on M-F from 7-4 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7118 for regular communications and (703) 305-7115 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson  
Examiner  
Art Unit 1725

 12/18/02

LRE  
December 18, 2002